

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A laser-clad processing apparatus for laser-clad processing a valve-seat portion of a cylinder head, comprising:
 - a cylinder-head holding device holding the cylinder head in an inclined orientation so that a central axial line of the valve seat portion defines a generally vertical line;
 - a laser-processing head irradiating a laser beam onto a process part of the valve seat portion, while discharging a powdery material to the process part; and
 - a rotator rotating the laser-processing head around the central axial line of the valve seat portion such that said laser-processing head is inclined with respect to the generally vertical line,wherein the laser-processing head includes a coaxial nozzle comprising a supply of powdery material, four powdery material-introductory portions spaced from each other at 90° intervals in a circumferential direction, a swirling chamber, and a rectifier rectifying a flow path of the powdery material, configured to direct the powdery material in a direction substantially parallel to the central axial line in an equal amount across the process part of the valve seat portion.

2. (Previously Presented) The laser-clad processing apparatus set forth in claim 1, wherein said cylinder-head holding device comprises:

an inclination device inclining the cylinder head between two positions, a first position wherein a central axial line of an inlet valve seat is substantially parallel to a

vertical line and a second position wherein a central axial line of an outlet valve seat is substantially parallel to the vertical line; and

a horizontal-movement device moving the cylinder head in the X-axis direction and in the Y-axis direction, which crosses with the X-axis direction perpendicularly, on a horizontal plane.

3. (Previously Presented) The laser-clad processing apparatus set forth in claim 1, wherein the laser-processing head comprises:

a laser-beam generator generating a laser beam; and

wherein the laser beam passes through the coaxial nozzle.

4. (Previously Presented) The laser-clad processing apparatus set forth in claim 3, wherein said laser-beam generator comprises a plurality of laser diode arrays, and shapes said laser beam by controlling the laser diode arrays depending on a width direction of said valve-seat portion.

5. (Previously Presented) The laser-clad processing apparatus set forth in claim 1, wherein said powdery-material supply includes pressurized carrier-gas to compressively supply the powdery material to said laser-processing head.

6. (Currently Amended) A laser-clad processing method for laser-clad processing a valve-seat portion of a cylinder head, comprising:

holding the cylinder head in an inclined orientation so that a central axial line of the valve seat portion defines a generally vertical line;

supplying a powdery material into a swirling chamber, via four powdery material-introductory portions spaced from each other at 90° intervals in a circumferential direction, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat portion; and

irradiating a laser beam to carry out the laser-clad processing.

7. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein the laser beam has a rectangular shape.

8. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein said laser-processing head rotates in a first direction, and rotates in a reverse second direction along the valve-seat portion.

9. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein the rectified flow of the powdery material results in a concentrated deposit on the valve seat portion within a circle whose diameter is adapted to a side of the laser beam, a side crossing perpendicular to the processing development direction.

10. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein the powdery material is melted by irradiating the laser beam behind a deposition center of the powdery material by a predetermined distance with respect to the development direction of laser processing.

11. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein, when stopping the supply of the powdery material, the flow of said powdery material is stopped, and a carrier gas pressure is lowered toward a predetermined value while taking a predetermined time since the time at the flow stoppage or immediately before the flow stoppage.

12. (Previously Presented) The laser-clad processing method set forth in claim 6, wherein: before supplying the powdery material, a carrier gas flow volume is increased; immediately before starting the flow of the powdery material, the flow volume is decreased to a steady flow volume; and immediately before a flow stoppage, the carrier gas is opened to air.